6L6-GC

Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:		
Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.9	amp
Direct Interelectrode Capacitances (Approx.):▲		
Grid-No.1 to plate	0.6	μμf
Grid-No.1 to cathode & grid No.3, grid No.2, and heater	10	μμf
Plate to cathode & grid No.3, grid No.2, and heater	6.5	μμf

Characteristics, Class A_1 Amplifier:

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage	-14	volts
Plate Resistance (Approx.)	22500	ohms
Transconductance	6000	μmhos
Plate Current	72	ma
Grid-No.2 Current	5	ma

Mechanical:

Operating Position . . . . Any
Maximum Overall Length . . . . 4-1/4"
Maximum Seated Length . . . . 3-11/16"
Diameter . . . . 1.438" to 1.562"
Bulb T-12
Base . . . Medium-Shell Octal 7-Pin (JEDEC Group 1, No.B7-12), Short Medium-Shell Octal 7-Pin with External Barriers Style A (JEDEC Group 1, No.B7-111) or Style B (JEDEC Group 1, No.B7-119), or Short Medium-Shell Octal 6-Pin with External Barriers Style A (JEDEC Group 1, No.B6-148) or Style B (JEDEC Group 1, No.B6-122)
Basing Designation for BOTTOM VIEW 7AC

Pin 1● - No Connection
Pin 2 - Heater
Pin 3 - Plate
Pin 4 - Grid No.2
Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode, Grid No.3

AF POWER AMPLIFIER — Class A_1

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	500	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	450	max.	volts
GRID-No.2 INPUT	5	max.	watts
PLATE DISSIPATION	30	max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. .	200	max.	volts
Heater positive with respect to cathode. .	200★	max.	volts

Typical Operation and Characteristics:

Fixed-Bias Operation

Plate Voltage.	200	250	300	350	volts
Grid-No.2 Voltage.	200	250	200	250	volts
Grid-No.1 (Control-Grid) Voltage.	-11.5	-14	-12.5	-18	volts
Peak AF Grid-No.1 Voltage.	11.5	14	12.5	18	volts
Zero-Signal Plate Current.	52	72	48	54	ma
Max.-Signal Plate Current.	57	79	55	66	ma
Zero-Signal Grid-No.2 Current.	3.5	5	2.5	2.5	ma
Max.-Signal Grid-No.2 Current.	5.7	7.3	4.7	7	ma
Plate Resistance (Approx.).	35000	22500	35000	33000	ohms
Transconductance	5300	6000	5300	5200	µmhos
Load Resistance.	3000	2500	4500	4200	ohms
Total Harmonic Distortion.	9	10	11	15	%
Max.-Signal Power Output .	4	6.5	6.5	10.8	watts

Cathode-Bias Operation

Plate Supply Voltage	200	250	300	volts
Grid-No.2 Supply Voltage	200	250	200	volts
Cathode Resistor	186	167	218	ohms
Peak AF Grid-No.1 Voltage.	11.5	14	12.7	volts
Zero-Signal Plate Current.	55	75	51	ma
Max.-Signal Plate Current.	56	78	54.5	ma
Zero-Signal Grid-No.2 Current. . . .	4.2	5.4	3	ma
Max.-Signal Grid-No.2 Current. . . .	5.6	7.2	4.6	ma
Load Resistance.	3000	2500	4500	ohms
Total Harmonic Distortion.	9	10	11	%
Max.-Signal Power Output	4	6.5	6.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1	max.	megohm
For cathode-bias operation	0.5	max.	megohm

AF POWER AMPLIFIER — Class A_1

Triode Connection — Grid No.2 Connected to Plate

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE.	450	max.	volts
PLATE DISSIPATION.	30	max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. .	200	max.	volts
Heater positive with respect to cathode. .	200★	max.	volts

Typical Operation and Characteristics:

	Fixed Bias	*Cathode Bias*	
Plate Supply Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	-20	–	volts
Cathode Resistor	–	490	ohms
Peak AF Grid-No.1 Voltage	20	20	volts
Zero-Signal Plate Current	40	40	ma
Maximum-Signal Plate Current	44	42	ma
Plate Resistance (Approx.)	1700	–	ohms
Amplification Factor	8	–	
Transconductance	4700	–	μmhos
Load Resistance	5000	6000	ohms
Total Harmonic Distortion	5	6	%
Maximum-Signal Power Output	1.4	1.3	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER — Class A_1

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	500 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	450♦ max.	volts
GRID-No.2 INPUT	5 max.	watts
PLATE DISSIPATION	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200* max.	volts

Typical Operation and Characteristics:

Unless otherwise specified, values are for 2 tubes

	Fixed Bias		*Cathode Bias*		
Plate Supply Voltage	250	270	250	270	volts
Grid-No.2 Supply Voltage	250	270	250	270	volts
Grid-No.1 Voltage	-16	-17.5	–	–	volts
Cathode Resistor	–	–	124	124	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage	32	35	35.6	28.2	volts
Zero-Signal Plate Current	120	134	120	134	ma
Max.-Signal Plate Current	140	155	130	145	ma
Zero-Signal Grid-No.2 Current	10	11	10	11	ma
Max.-Signal Grid-No.2 Current	16	17	15	17	ma
Plate Resistance (Approx., per tube)	24500	23500	–	–	ohms
Transconductance (Per tube)	5500	5700	–	–	μmhos
Effective Load Resistance (Plate to plate)	5000	5000	5000	5000	ohms
Total Harmonic Distortion	2	2	2	2	%
Max.-Signal Power Output	14.5	17.5	13.8	18.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation.	0.1 max.	megohm
For cathode-bias operation.	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER — Class AB_1

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	500 max.	volts
GRID-No.2 VOLTAGE	450♦ max.	volts
GRID-No.2 INPUT	5 max.	watts
PLATE DISSIPATION	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200★ max.	volts

Typical Operation:

Values are for 2 tubes

	Fixed Bias			*Cathode Bias*	
Plate Supply Voltage. . . .	360	450	450	360	volts
Grid-No.2 Supply Voltage. .	270	350	400	270	volts
Grid-No.1 (Control-Grid) Voltage♠.	-22.5	-30	-37	–	volts
Cathode Resistor.	–	–	–	248	ohms
Peak Af Grid-No.1-to-Grid-No.1 Voltage	45	60	70	40.6	volts
Zero-Signal Plate Current. .	88	95	116	88	ma
Max.-Signal Plate Current .	132	194	210	100	ma
Zero-Signal Grid-No.2 Current	5	3.4	5.6	5	ma
Max.-Signal Grid-No.2 Current	15	19.2	22	17	ma
Effective Load Resistance (Plate to plate).	6600	6000	5600	9000	ohms
Total Harmonic Distortion .	2	1.5	1.8	4	%
Max.-Signal Power Output. .	26.5	50	55	24.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:♠		
For fixed-bias operation.	0.1 max.	megohm
For cathode-bias operation.	0.5 max.	megohm

PUSH-PULL AF AMPLIFIER — Class AB_2

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE.	500 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	450♦ max.	volts
GRID-No.2 INPUT.	5 max.	watts
PLATE DISSIPATION.	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	200 max.	volts
Heater positive with respect to cathode. .	200★ max.	volts



Typical Operation:

Values are for 2 tubes

	Fixed Bias		
Plate Voltage	360	360	volts
Grid-No.2 Voltage	225	270	volts
Grid-No.1 (Control-Grid) Voltage♣	-18	-22.5	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage	52	72	volts
Zero-Signal Plate Current	78	88	ma
Max.-Signal Plate Current	142	205	ma
Zero-Signal Grid-No.2 Current	3.5	5	ma
Max.-Signal Grid-No.2 Current	11	16	ma
Effective Load Resistance (Plate to plate)	6000	3800	ohms
Peak Grid-Input Power♠	140	270	mw
Total Harmonic Distortion	2	2	%
Max.-Signal Power Output	31	47	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:♠

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	Not recommended	

▲ Without external shield.

● On the 6-pin bases, pin 1 as well as pin 6 is omitted.

★ The dc component must not exceed 100 volts.

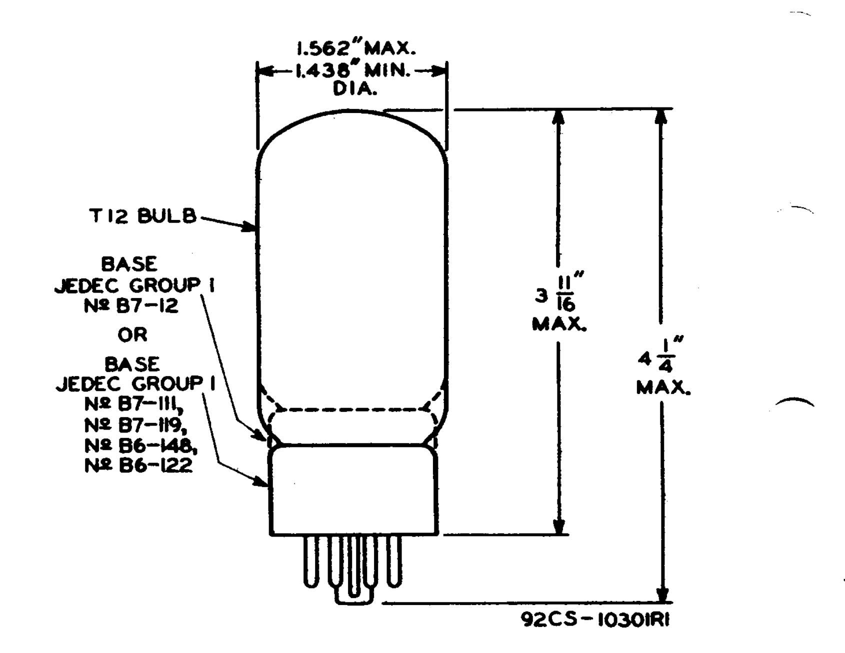
♦ In push-pull circuits where grid No.2 of each tube is connected to a tap on the plate winding of the output transformer, it is permissible for this voltage to be as high as 500 volts.

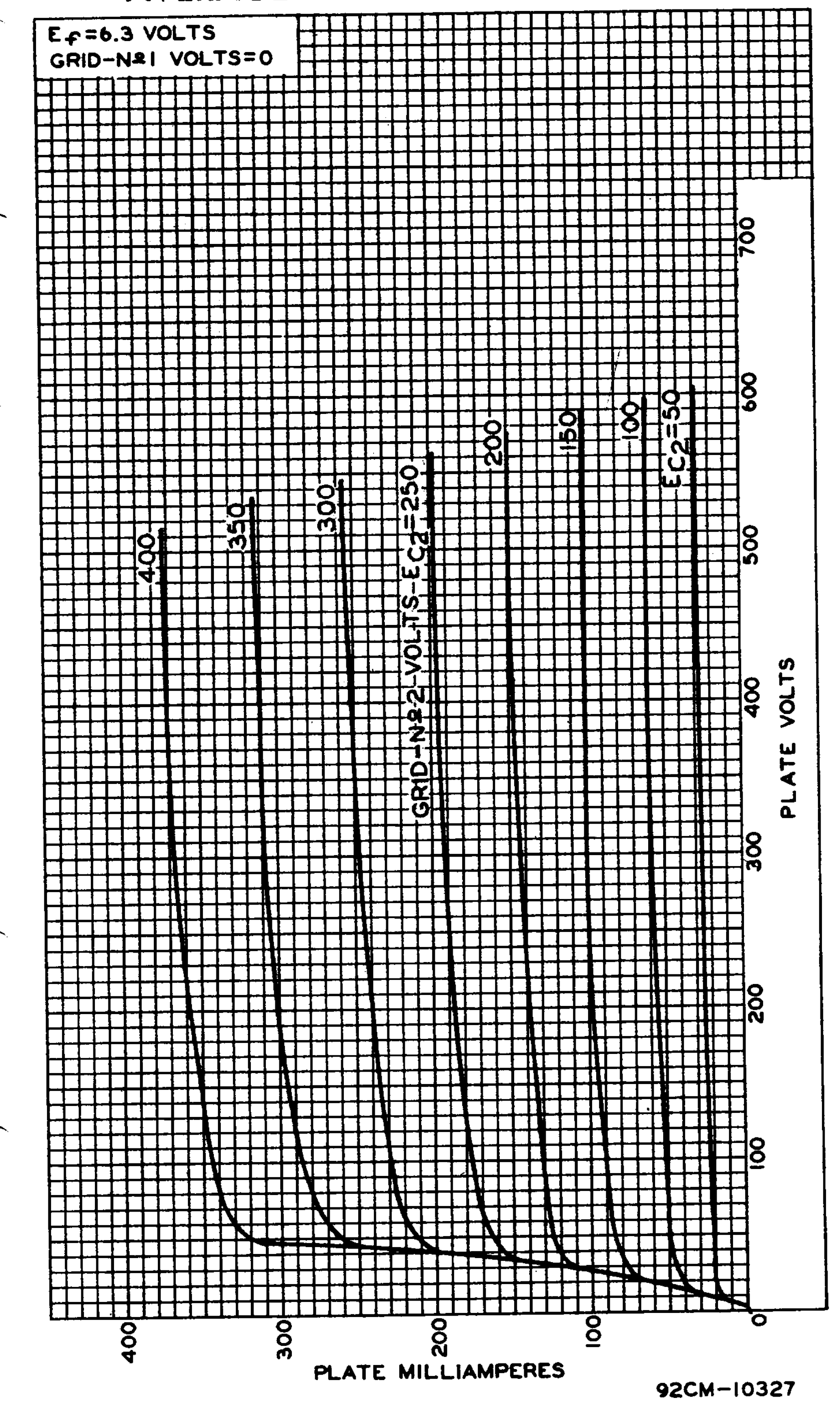
♣ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

♠ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB_2 stage. To minimize distortion, the effective resistance per grid-No.1 circuit of the AB_2 stage should be held at a low value. For this purpose, the use of transformer coupling is recommended.

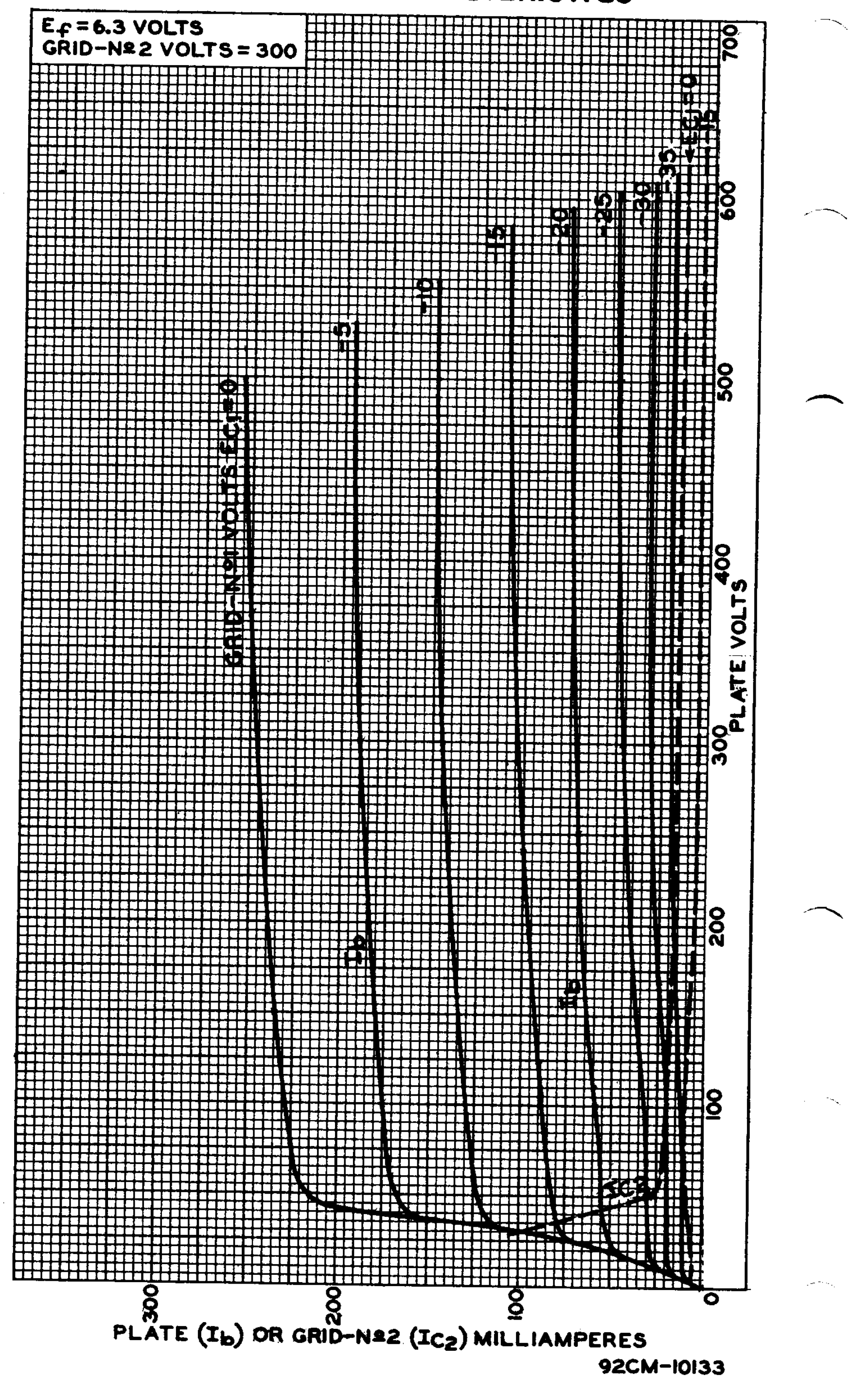
OPERATING CONSIDERATIONS

The *bulb* becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided.


1.562" MAX.
1.438" MIN.
DIA.
T12 BULB
BASE
JEDEC GROUP I
Nº B7-12
OR
BASE
JEDEC GROUP I
Nº B7-111,
Nº B7-119,
Nº B6-148,
Nº B6-122
3 11/16"
MAX.
4 1/4"
MAX.
92CS-10301R1

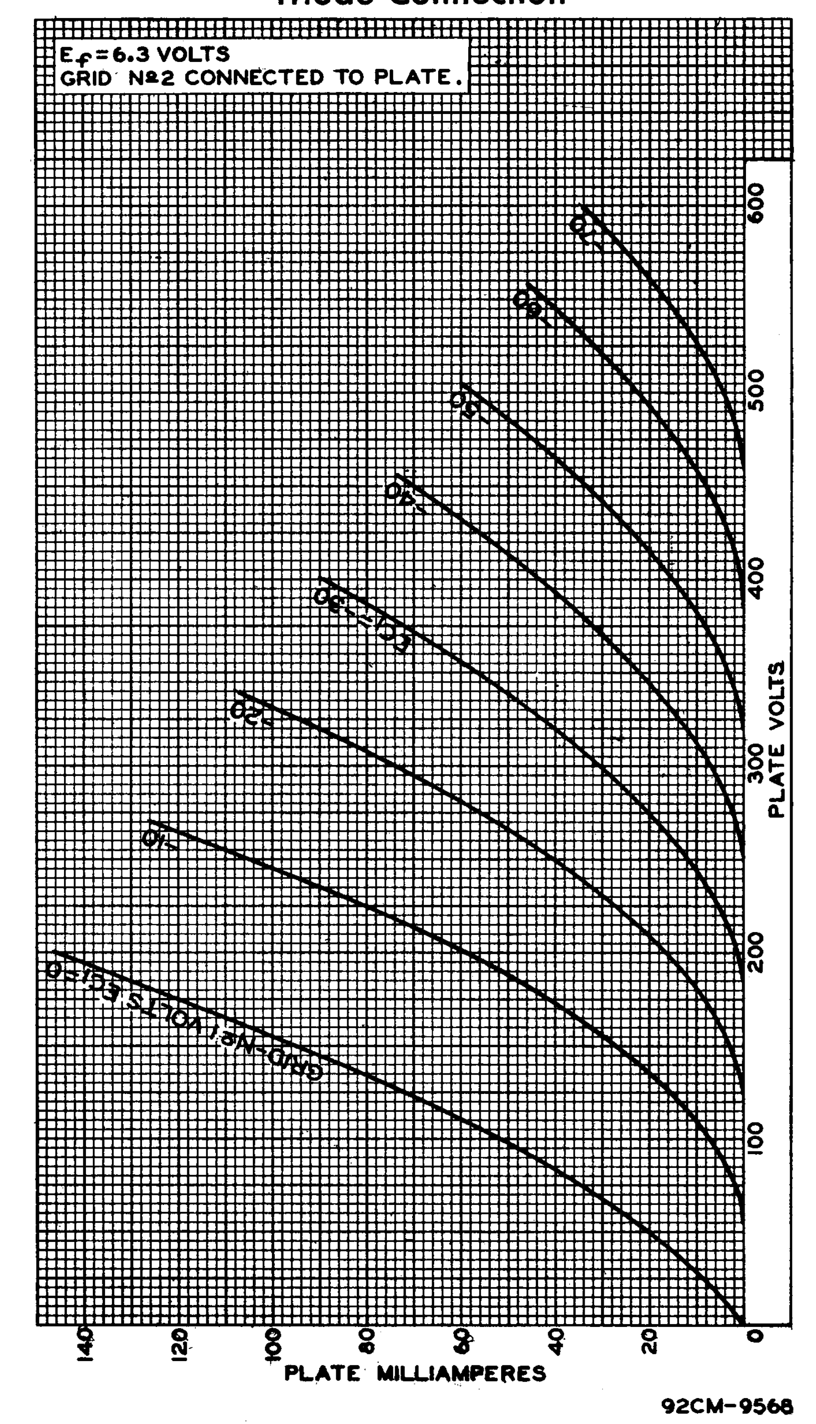

AVERAGE PLATE CHARACTERISTICS
Ef=6.3 VOLTS
GRID-No1 VOLTS=0
400
350
300
GRID-No2-VOLTS-Ec2=250
200
150
100
Ec2=50
PLATE VOLTS
PLATE MILLIAMPERES
0
100
200
300
400
500
600
700
92CM-10327

AVERAGE CHARACTERISTICS



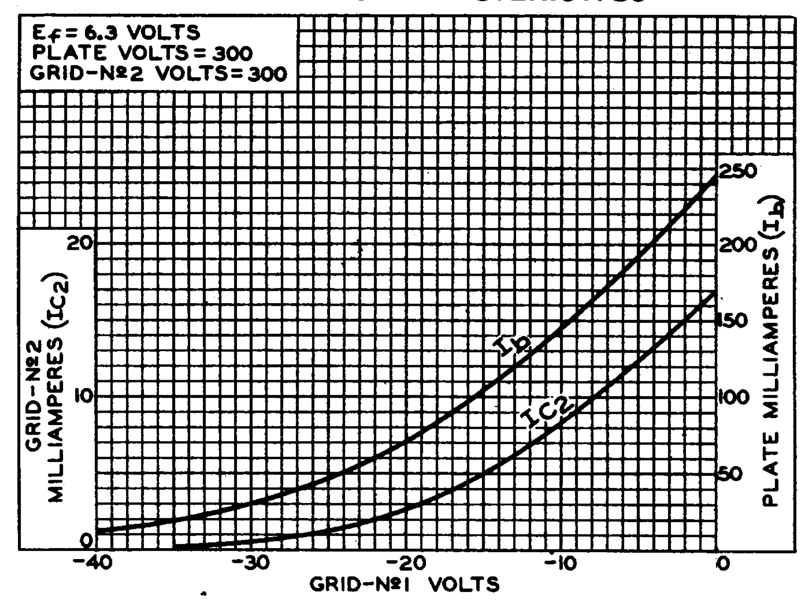
92CM-10133

AVERAGE PLATE CHARACTERISTICS
Triode Connection



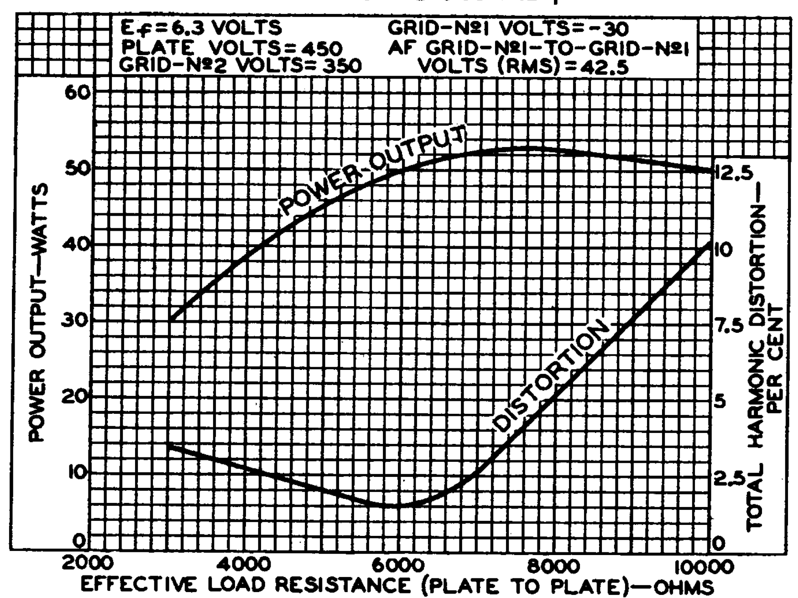
92CM-9568

AVERAGE CHARACTERISTICS



92CS-10126

OPERATION CHARACTERISTICS
Push-Pull Class AB1



92CS-9575